

## Title of the workshop

### **An open-source Pharmacometrician's workflow in R: from exploration (xGx) to model building (nlmixr) and diagnostics (ggPMX)**

## Workshop target audience

Pharmacometricians/modelers with basic knowledge on model building, evaluation and qualification. Basic knowledge of writing and executing R scripts is required.

## Workshop overview

The workshop will provide a tutorial on three open-source R packages, supporting the pharmacometrics workflow in exploring and modeling clinical data:

- Exploration of the data using the Exploratory Graphics (**xGx**) package, available on CRAN and GitHub (<https://opensource.nibr.com/xgx/>).
- Population PK and PKPD modeling of the data using **nlmixr** package, available on CRAN and GitHub ([www.nlmixr.org](http://www.nlmixr.org)). nlmixr builds on the ODE simulation package RxODE, by implementing parameter estimation algorithms like SAEM and FOCE with interaction.
- Model building and validation using **ggPMX**, a library of reproducible diagnostic plots available on CRAN and on Github (<https://github.com/ggPMXdevelopment/ggPMX>).

The combination of the three open-source R packages provides the Pharmacometrics modeling community the opportunity to reduce the learning curve needed to become proficient on each of the different tasks using a stepwise framework.

## Workshop Learning Objectives

During the workshop, the participants will have the opportunity to become familiar with the packages with extensive hands-on sessions, which will follow the initial lectures on xGx, ggPMX, and nlmixr. The participants will have a chance to experience the stepwise framework of the Pharmacometrics workflow. First, through a question-based approach, xGx helps to uncover useful insights that can be revealed without complex modelling and to identify aspects of the data that may be explored further. Next, nlmixr is used for building an adequate population model refined by the exploration of the data to characterize the dose-exposure-response relationship. Finally, the model evaluation, validation and reporting is driven by ggPMX. The model diagnostic plots help in selecting the model describing the data most accurately.

## Workshop Timetable

Time	Topic
8:00 – 8:30	Introduction
8:30 – 10:00	xGx: lecture + hands-on
<b>Coffee break</b>	
10:30 – 12:00	ggPMX: lecture + hands-on
<b>Lunch</b>	
13:00 – 14:30	nImixr: lecture + hands-on (part 1)
<b>Coffee break</b>	
15:00 – 16:30	nImixr: lecture + hands-on (part 2)
16:30 – 17:00	Concluding remarks and round table discussion

## Date and Duration

Tuesday, June 28<sup>th</sup> 2020: 8AM-5PM

## Registration Fee

Industry: 150 euros

Academia (professors, post-docs) / Government / Non-profit: 100 euros

Students: 50 euros

## Maximum Number Participants

60

## Requirements

Participants are expected to bring their laptops and have the packages installed on their laptops (instructions will be sent by email prior to the workshop).